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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,994	11/09/2001	Peter J. Janssen	PHUS010506	1293

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EXAMINER

DUONG, THOI V

ART UNIT PAPER NUMBER

2871

DATE MAILED: 12/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/052,994

Applicant(s)

JANSSEN, PETER J.

Examiner

Thoi V Duong

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 3-13 ~~is/are~~ are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3-13 ~~is/are~~ are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

### DETAILED ACTION

1. This office action is in response to the Amendment filed September 8, 2003.

Accordingly, claims 3, 9 and 11 were amended, and claims 1 and 2 were cancelled. Currently, claims 3-13 are pending in this application.

#### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3-8 and 11-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear how the anisotropic intermediate layer is optically uniform. The specification does not disclose the optically uniform anisotropic intermediate layer recited in claims 3-8 and 11. Claims 12 and 13 are also rejected since they depend on the indefinite claim 11. In the Examiner's opinion, the anisotropic intermediate layer is optically uniform when a uniform orientation state such as homeotropic, or homogeneous, or hybrid can be fixed between the display substrates.

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3-8, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatano et al. (USPN 6,320,629 B1) in view of JP 08-029618 (JP'618).

With respect to claim 1, as shown in Fig. 1, Hatano et al. discloses an LCD system capable of fast mode operation with high contrast, said system comprising:

- a) a source of polarized lights (col. 10, line 55 to col. 11, line 23) ;
- b) an LC cell 100 having a surface upon which said light is incident, wherein said cell includes LC bulk material 103 contained between and adjoining an upper and a lower glass substrate 101a and 102a, said upper substrate 101a having said surface; and

- c) an optically anisotropic intermediate layer 108 interposed between said upper substrate and said LC material,

wherein said optically anisotropic intermediate layer is a photopolymerizable liquid crystal material having a predetermined director profile (col. 8, lines 12-22 and col. 10, lines 12-26).

With respect to claim 11, as shown in Fig. 12, Hatano et al. discloses an LC light valve capable of operation with high contrast in fast operating modes, including ECB (col. 27, lines 43-44), said light valve comprising:

- a) upper and lower glass substrates 11 and 22 having opposed surfaces in spaced, parallel planes;

- b) a layer of LC material 621 interposed between said opposing surfaces and adjoining said lower substrate; and

c) an intermediate layer 618 of LC polymer material interposed between and adjoining each of said upper substrate and said LC material, said LC polymer material having a particular director profile such that the light valve is subject to a strong bias when TFTs are in OFF state (col. 27, lines 24-30 and 43-64).

Hatano et al. also discloses an LCD system that is basically the same as that recited in claims 3-8 and 11 except for an optically uniform anisotropic intermediate layer. However, Hatano et al. teaches that an optical anisotropic film disclosed in JP'618 may be used in place of the optically anisotropic intermediate layer of Hatano et al. (col. 10, lines 23-26 and col. 27, lines 24-30). Accordingly, JP'618 discloses an optical anisotropic film used as a light filter for an LCD system, wherein a uniform orientation state (such as homogeneous orientation) can be fixed in order to obtain a bright display (see Abstract and Detailed Description, paragraphs 38-46 and 62). Accordingly, the pretilt throughout the optical anisotropic film deviates by less than 10° from the direction parallel to an opposing substrate.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the LCD system of Hatano et al. with the teaching of JP'618 by forming an optically uniform anisotropic intermediate layer interposed between said upper substrate and said LC material so as to obtain a bright display.

With respect to claims 6-8, as to the product-by-process limitation "wherein said optically anisotropic intermediate layer is evaporated obliquely between said upper and lower glass substrates" recited in claim 6, "wherein said optically anisotropic

intermediate layer is etched by an oblique particle beam" recited in claim 7, and "wherein said optically anisotropic intermediate layer is milled" recited in claim 8, it has been recognized that "Even through product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior art product was made by a different process". *In re Thorpe*, 227 USPQ 964,966 (Fed. Cir. 1985). See also MPEP 2113.

6. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatano et al. (USPN 6,320,629 B1) in view of Woo et al. (USPN 6,191,836 B1).

As shown in Fig. 12, Hatano et al. discloses an LCD system capable of fast mode operation with high contrast, said system comprising:

- a) a source of polarized lights (col. 10, line 55 to col. 11, line 23) ;
- b) an LC cell 600 having a surface upon which said light is incident; and
- c) contrast enhancement means 618 (col. 27, lines 24-30),

wherein said cell includes LC bulk material 621 contained between and adjoining an upper and a lower glass substrate 11 and 22, said upper substrate having said surface.

Hatano et al. discloses a LCD system including ECB (col. 27, lines 43-44) that is basically the same as that recited in claims 9 and 10 except for the liquid crystal material having a pretilt of between about 45° and 90° on the side adjoining said upper substrate and a pretilt of less than 10° on the side adjoining said lower substrate. As

shown in Fig. 10e, Woo et al. discloses a method for fabricating a liquid crystal display cell and related device wherein one alignment layer alignment is aligned in a homeotropic mode and the other alignment layer is aligned in a homogeneous mode (col. 6, lines 19-22) so as to obtain a wider view angle for the display (col. 2, lines 21-27). Accordingly, the LC material may have a pretilt of about  $90^\circ$  on the side adjoining said upper substrate and a pretilt of less than  $10^\circ$  on the side adjoining said lower substrate. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the LCD system of Hatano et al. with the teaching of Woo et al. by forming an LC bulk material having a pretilt of between about  $45^\circ$  and  $90^\circ$  on the side adjoining the upper substrate and a pretilt of less than  $10^\circ$  on the side adjoining the lower substrate to improve the display view angle.

7. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hatano et al. (USPN 6,320,629 B1) in view of JP 08-029618 (JP'618) as applied to claims 3-8 and 11 above and further in view of EP 0604903 A2 (EP'903).

The LC light valve of Hatano et al. as modified in view of JP'618 above includes all that is recited in claim 12 except for reflections of incident light reduced due to gradual transition of refractive index from said upper substrate to said boundary layer to said LC material adjoining said boundary layer. EP'903 discloses that in order to improve the display quality of a liquid crystal display panel, all the differences of the index of refraction of between adjacent layers at interfaces between two substrates are set to be 0.2 or less (page 3, lines 35-42, see also Table 1). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to

further modify the LC light valve of Hatano et al. with the teaching of EP'903 by having gradual transition of refractive index from the upper substrate to the boundary layer to the LC material adjoining said boundary layer for reducing reflections of incident light and hence improving the display quality.

### ***Response to Arguments***

8. Applicant's arguments filed 09/08/2003 have been fully considered but they are not persuasive.

With respect to claims 9 and 10, Applicant argued that the limitations of those claims are not met if the pretilts of Woo et al. are added to the LC bulk material structure of Hatano et al. The Examiner disagrees with the Applicant's remarks because Hatano et al. discloses every limitations of the claims including the LC bulk material having ECB mode except for a pretilt of between about 45° and 90° on the side adjoining the upper substrate and a pretilt of less than 10° on the side adjoining the lower substrate. Therefore, the reference of Woo et al. is employed for teaching a layer of hybrid aligned liquid crystal material which could be used for the LCD system of Hatano et al. to further improve the display view angle.

### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).




A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (703) 308-3171. The examiner can normally be reached on Monday-Friday from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached at (703) 305-3492.

Thoi Duong

12/13/2003

  
T. Duong  
Primary Examiner